

Amendments to the Drawings:

Enclosed please find ten (10) sheets of corrected drawings for Figs. 15 – 24.

REMARKS

The office action of November 30, 2004 has been reviewed and its contents carefully noted. Reconsideration of this case, as amended, is requested. Claims 1-20 through 22-33 remain in this case, claim 21 being cancelled and claims 29-33 being added by this response.

Preliminary Comments

The claims were amended as follows, to correct typographical errors and other informalities. No new matter was introduced. Specifically:

- a. Claim 22 was amended to correct typographical errors.
- b. Claim 25-28 have been rewritten in independent form.

Objections to the Specification / Claims / Abstract / Drawing

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they (all drawings) do not include any references sign(s) mentioned in the description.

Corrected drawings sheets in compliance with 37 CFR 1.21(D) are submitted in the instant reply to Office Action. Reconsideration and withdrawal of the objections are respectfully requested.

Rejection(s) under 35 U.S.C. §102

Claims 1-3, 5-7, and 10-24 were rejected under 35 U.S.C. 102(b) as being anticipated by Kim (5,353,214), hereinafter referred to as Kim. Applicant respectfully disagrees with the rejection.

Claim 1 recites as follows:

a high intensity discharge (HID) driver for a HID lamp, comprising:

an input processor connected to an input power for suppressing a transient and an in-rush current of the input power;

a main driver having at least one capacitance contained therein for determining an output power, the main driver being connected to the input processor and a HID lamp for driving and amplifying the input power; and

a protection circuit connected to the main driver and the HID lamp for controlling a timing of starting after a failure condition.

The Office Action states that:

Regarding Claim 1, Kim discloses a high intensity discharge driver for a HID lamp (sodium or mercury lamp, L shown in figure 4 and abstract), comprising:

- an input processor (**10 BD**) connected to an input power for suppressing a transient and an in-rush current of the input power (See Col. 2, lines 11-15);
- **a main driver (50, 60)** connected to the input processor (10) and a HID lamp (L) for driving and amplifying the input power; and
- **a protection circuit (70) connected** to the main driver and the HID lamp for controlling a timing of starting after a failure condition (when IC is suspended due to overload or overheat, the starting time will be delayed. *See col. 3, lines 39-59*). (Emphasis added)

Kim teaches a **neon** circuit includes a protective function and provides for an *adjustable output voltage* and an *adjustable luminous intensity*. The neon circuit when there is a *neon bulb present as the load* such as a sodium or mercury lamp provides for power saving and its life is lengthened with high dependability. The circuit includes a **line filter** and a *high powered factor* compensation circuit.

Kim discloses a circuit similar to the prior art listed in the present patent application in that a **transformer** is used as the main driving element for coupling with a load (See the Background section and Figure 13 of the present application. In other words, the **transformer 60** of Kim is similar to the prior art's known structure or method of coupling with a load. The **main driver 104** of the present invention is NOT Kim's numerals 50, 60 as alleged by the Examiner. At least the transformer 60 is NOT identical or similar to any elements disclosed in the present invention relating to the main **driver 104**.

In addition, *the protection circuit 110 of the present invention is connected to the main driver 104 of the present invention* for controlling a timing of starting after a failure condition, whereas as on the other hand circuit 70, which is denoted by the Examiner as identical and similar to the protection circuit 110 of the present invention (Applicant disagrees with said assertion), is NOT connected to the **main driver 104 of the present invention**. In fact, circuit 70 of Kim is coupled to the **transformer 60**. Therefore, even if the Examiner's assertion that Kim's numerals 50, 60 is the main driver, which Applicant disagrees with, the resultant structure or circuit would still be that of prior art. (See discussions supra.)

As can be seen, the numeral 50 of Kim is an inverter circuit, NOT the main driver as disclosed in the present invention. In addition, the numeral 60 of Kim is an output transformer. The combination of number 50 and 60 is NOT the main driver as disclosed in the present invention in that the structure of the main driver of the present invention is NOT merely a combination of the inverter circuit 50 and transformer 60 of Kim. At least whatever the Examiner's alleged main driver is, it does NOT have "at least one capacitance contained therein for determining an output power, the main driver being connected to the input processor and a HID lamp for driving and amplifying the input power".

For dependent claims 2-3, 5-7, and 10-24; by virtue of their dependency of claim 1, are deemed patentable as well. In addition, with regard to claim 5, which recites:

5. The HID driver of claim 1, wherein the HID driver further comprises:

a timing circuit connected to the main driver for controlling a timing; and

a starting circuit connected to the timing circuit and the HID lamp for starting the HID lamp.

The instant Office Action states with regard to claim 5 as follows:

Kim discloses that the HID driver comprises:

A timing circuit (control circuit 40 for oscillating inverter 50 shown in Figure 1) connected to the main driver (50) for controlling a timing; and

A starting circuit (trigger element DIAC2, transformer Ts, Col. 3, lines 5-7 and Figure 4) connected to the timing circuit and HID lamp for starting (triggering) the HID lamp.

As an initial matter, Applicant cannot find or locate Ts in Kim's text. However, there is a Ts in Figure 4 of Kim. Applicant respectfully disagrees with the Examiner's assertion that trigger element DIAC2, transformer Ts, Col. 3, lines 5-7, and Figure 4 constitutes that starting circuit of the present invention, in which the starting circuit is connected to the timing circuit and HID lamp for starting (triggering) the HID lamp. At least the transformer Ts of Kim should be the output transformer, i.e. transformer 60. Assuming the validity of the prior sentence, the Examiner has committed a logic mistake in that the transformer 60 is used for rejections as both within the "starting circuit" and the "main driver". Even if assuming that the Examiner's allegations are logically correct in that output transformer can act both as part of the "starting circuit" and the "main driver" of the present invention, the output transformer is still prior art. (See arguments *supra*.)

Furthermore, with regard to dependent claim 22, the office action alleges that "Kim discloses the main driver further comprises a feedback control unit (detection transformer T4) (See Col. 3, lines 39-48) connected to the PFC circuit (20), the power drive (IC2) and the half bridge inverter (Q2, Q3) (see figure 2)."

Claim 22 recites:

22. The HID driver of claim 5, wherein the main driver further comprises a feedback control circuit connected to the PFC circuit, ~~the~~ **a power drive** and ~~the~~ **a** half bridge inverter.

T4 is NOT the feedback control circuit of the present invention. The paragraph cited by the Examiner, i.e. col. 3, lines 39-48, is listed below for the benefit of the Examiner.

In the case where load is not connected thereto, or it is overloaded or output is short or it is overheated at this time, **the protective circuit 70 operates**, and so an overcurrent is detected by **the transformer T.sub.4** which detects overload and rectified in the diodes D.sub.6, D.sub.7 and a signal divided by resistances R.sub.28, R.sub.25 via an impedance resistance R.sub.37 is applied to the integrated circuit IC.sub.2 of control circuit 40 through resistance R.sub.24 and the output of said integrated circuit IC.sub.2 is thereby discontinued.

As can be seen, even if T4 is the equivalent of the feedback control circuit, which Applicant disagrees, the structure and function of T4 is NOT similar to the feedback control circuit of the present invention in that it is still NOT the same as T4 of Kim. For example, T4, as disclosed by Kim in the above cited paragraph by the Examiner, is associated in operation with the protective circuit 70, which is asserted by the Examiner to be the protection circuit 110 of the present invention. However, the feedback control circuit 220 of the present invention is NOT connected at all with the protection circuit 110. In fact, the feedback control circuit is part of a feedback loop within the main driver 104. In other words, the feedback control circuit is part of the main driver 104.

Rejection(s) under 35 U.S.C. §103

Claims 4, 8, and 9 were rejected under 35 U.S.C. 103(a) as being unpatentable over Kim in view of Peil (5,428,267) hereinafter referred to as Peil.

As an initial matter, claims 4, 8, and 9 being dependent upon independent claim 1 (see traversing supra), by virtue of their dependency, are deemed patentable.

Reconsideration and withdrawal of the rejection are respectfully requested.

Allowable Subject Matter

Claims 25-28 were objected to as being dependent upon a rejected base claim, but the Examiner indicated that they would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 25-28 have been written in independent form. Reconsideration and withdrawal of the objection on claims 25-28 are respectfully requested. In addition, Applicant gratefully acknowledges Examiner's statement that claims 25-28 are allowable.

30. A high intensity discharge (HID) driver for a HID lamp, comprising:

- an input processor connected to an input power for suppressing a transient and an in-rush current of the input power;
- a main driver connected to the input processor and a HID lamp for driving and amplifying the input power;
- a protection circuit connected to the main driver and the HID lamp for controlling a timing of starting after a failure condition.
- a timing circuit connected to the main driver for controlling a timing; and
- a starting circuit connected to the timing circuit and the HID lamp for starting the HID lamp, wherein the starting circuit comprises a circuit having a capacitor for fine tuning an output of the HID lamp, a brightness of the HID lamp, and a low-frequency content for controlling an induced sound resonance.

31. A high intensity discharge (HID) driver for a HID lamp, comprising:

- an input processor connected to an input power for suppressing a transient and an in-rush current of the input power;
- a main driver connected to the input processor and a HID lamp for driving and amplifying the input power;
- a protection circuit connected to the main driver and the HID lamp for controlling a timing of starting after a failure condition;
- a timing circuit connected to the main driver for controlling a timing; and
- a starting circuit connected to the timing circuit and the HID lamp for starting the HID lamp, wherein the starting circuit comprises a circuit having a thyristor between a capacitor and a resistance for preventing the HID drive from restating when the HID lamp is on.

32. A high intensity discharge (HID) driver for a HID lamp, comprising:

- an input processor connected to an input power for suppressing a transient and an in-rush current of the input power;
- a main driver connected to the input processor and a HID lamp for driving and amplifying the input power;
- a protection circuit connected to the main driver and the HID lamp for controlling a timing of starting after a failure condition;

a timing circuit connected to the main driver for controlling a timing; and

a starting circuit connected to the timing circuit and the HID lamp for starting the HID lamp,
and a thyristor being connected to the timing circuit to control a re-starting of the
HID lamp by the timing circuit.

33. A high intensity discharge (HID) driver for a HID lamp, comprising:

an input processor connected to an input power for suppressing a transient and an in-rush
current of the input power;

a main driver connected to the input processor and a HID lamp for driving and amplifying
the input power, the main driver comprising a first integrated circuit (IC) for PFC
and for governing preceding filtering and rectification and a second IC for power
driving and the timing circuit comprises a third IC, and when input voltages of the
first, second and third ICs are below predetermined values, the second and the third
ICs are locked out and the first IC is maintained to be powered and ready for a
re-starting;

a protection circuit connected to the main driver and the HID lamp for controlling a timing
of starting after a failure condition;

a timing circuit connected to the main driver for controlling a timing; and

a starting circuit connected to the timing circuit and the HID lamp for starting the HID lamp.

Conclusion

Applicant believes the claims, as amended, are patentable over the prior art, and that this case is now in condition for allowance of all claims therein. Such action is thus respectfully requested. If the Examiner disagrees, or believes for any other reason that direct contact with Applicants' attorney would advance the prosecution of the case to finality, he is invited to telephone the undersigned at the number given below.

Recognizing that Internet communications are not secured, I hereby authorize the PTO to communicate with me concerning any subject matter of this application by electronic mail. I understand that a copy of these communications will be made of record in the application file.

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